State/Industry Network

Air Quality Report

1st Quarter 1997

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Air Quality Monitoring Branch
Division of Environmental Engineering
North Dakota Department of Health

June 1997

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SECTION ONE

DISCUSSION OF

MONITORING RESULTS

Sulfur Dioxide (SO_2)

There was one exceedance of the State 24-hour standard during the quarter. The maximum 1-hour concentration was 158 ppb at Mandan Refinery - SPM on January 9; the maximum 3-hour concentration was 138 ppb at Mandan Refinery - SPM on January 9; and, the maximum 24-hour concentration was 104 ppb at Mandan refinery - SPM on January 9. All sites achieved at least an 80% data recovery for the period operated except Bear Paw-MGP #3.

Bear Paw -MGP #3 failed to achieve 80% data recovery due to not performing required bi-weekly quality assurance checks.

Sulfur Dioxide (SO_2) 5-Minute Average

The maximum 5-minute concentration was 285 ppb at Mandan - Refinery on March 19.

Hydrogen Sulfide (H_2S)

There were four exceedances of the 1-hour H_2S standard during the quarter at Whiskey Joe - SPM. The maximum 1-hour concentration was 247 ppb at Whiskey Joe - SPM on March 14; the maximum 24-hour concentration was 40 ppb at Whiskey Joe - SPM on February 1; the maximum 3-month concentration was 8 ppb at Whiskey Joe - SPM in January. All sites except Bear Paw -MGP #4 achieved at least an 80% data recovery for the period operated.

Bear Paw -MGP #4 failed to meed the 80% data recovery due to equipment malfunctions.

The four 1-hour accedences at Whiskey Joe - SPM were caused by the Federal 1-7 well owned by Slawson Exploration, Inc., southeast of the monitoring site. A Notice of Violation was issued to Slawson Exploration, Inc., on January 16, 1997.

Ozone (O_3)

There was no exceedance of the ozone standard during the quarter. The maximum observed 1-hour concentration was 68 ppb at Fargo Residential on March 20. The maximum 8-hour concentration was 65 ppb at Sharon on March 8. All sites achieved at least an 80% data recovery for the period operated.

The Beulah and TRNP - NU analyzers were shut done for the winter effective September 30.

Nitrogen Dioxide (NO_2)

The maximum 1-hour concentration observed was 78 ppb at DGC #17 on January 1. All sites achieved at least an 80% data recovery for the period operated.

Inhalable $PM_{2.5}$ Particulates

The maximum 24-hour average concentration was 13.9 $\mu g/m^3$ at Bismarck Residential on February 9. Both sites achieved at least an 80% data recovery for the period operated.

Inhalable PM_{10} Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 33.6 $\mu g/m^3$ at Grand Forks - North on February 3. All sites achieved at least an 80% data recovery for the period operated.

Inhalable $PM_{2.5}$ Sulfates (SO_4)

The maximum 24-hour $PM_{2.5}$ sulfate concentration was 6.6 $\mu g/m^3$ at Beulah on January 4. Both sites achieved at least 80% data recovery.

Inhalable PM_{10} Sulfates

The maximum 24-hour PM_{10} sulfate concentration was 6.6 µg/m^3 at Fargo Residential on March 5 . All sites achieved at least 80% data recovery.

$PM_{2.5}$ Sulfate /$PM_{2.5}$ Analysis

The $PM_{2.5}$ Sulfate/$PM_{2.5}$ tables present statistics for $PM_{2.5}$ Sulfate and $PM_{2.5}$ total mass when both concentrations are greater than the respective minimum detectable concentration: 0.5 µg/m^3 for sulfate analysis; 4 µg/m^3 for $PM_{2.5}$ total mass. The statistics for the ratio are produced by evaluating the ratio of the $PM_{2.5}$ Sulfate concentration to the $PM_{2.5}$ total mass concentration for each data pair. In the individual summaries, one-half the minimum detectable concentration is substituted for those concentrations less than the minimum detectable value. However, when the $PM_{2.5}$ total mass concentration is less than 4 µg/m^3, the $PM_{2.5}$ sulfate concentration may be higher than the $PM_{2.5}$ total mass concentration because of the effect of the variability in the sulfate analysis procedure at low concentrations. Therefore, when calculating the ratio of $PM_{2.5}$ Sulfate concentration to $PM_{2.5}$ total mass concentration, only data pairs where both the $PM_{2.5}$ Sulfate and $PM_{2.5}$ total mass concentrations are greater than the minimum detectable concentrations are used. The ratio calculated is the concentration of sulfate as a function of the total mass collected. When the ratio is multiplied by 100, the ratio becomes the percentage of total mass which is sulfate. The maximum $PM_{2.5}$ Sulfate/$PM_{2.5}$ ratio was 0.652 (65.2%) at Bismarck Residential on January 4. The maximum average ratio was 0.405 (40.5%) at Beulah.

PM_{10} Sulfate/PM_{10} Analysis

These PM_{10} Sulfate/PM_{10} tables present statistics for PM_{10} Sulfate and PM_{10} total mass when both concentrations are greater than the respective minimum detectable concentration: 0.5 $\mu g/m^3$ for sulfate analysis; 4 $\mu g/m^3$ for PM_{10} total mass. The statistics for the ratio are produced by evaluating the ratio of the PM_{10} Sulfate concentration to the PM_{10} total mass concentration for each data pair. In the individual summaries, one-half the minimum detectable concentration is substituted for those concentrations less than the minimum detectable value. However, when the PM_{10} total mass concentration is less than 4 $\mu g/m^3$, the PM_{10} sulfate concentration may be higher than the PM_{10} total mass concentration because of the effect of the variability in the sulfate analysis procedure at low concentrations. Therefore, when calculating the ratio of PM_{10} Sulfate concentration to PM_{10} total mass concentration, only data pairs where both the PM_{10} Sulfate and PM_{10} total mass concentrations are greater than the minimum detectable concentrations are used. The ratio calculated is the concentration of sulfate as a function of the total mass collected. When the ratio is multiplied by 100, the ratio becomes the percentage of total mass which is sulfate. The PM_{10} Sulfate/PM_{10} ratio was at Sharon where the ratio was 0.558 (55.8%) on March 11. The maximum average ratio was 0.344 (34.4%) at both Beulah and Sharon.

SECTION TWO

AMBIENT AIR QUALITY DATA

SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1 - HOUR 1ST MM/DD/HH	1 - HOUR 2ND MM/DD/HH	3 - HOUR 1ST MM/DD/HH	3 - HOUR 2ND MM/DD/HH	24 - HOUR 1ST MM/DD	24 - HOUR 2ND MM/DD	ARITH MEAN	1HR #>273	24HR #>99	% >MDV
AMERADA HESS - TIOGA #1	1997	JAN-MAR	2334	34 03/18/20	33 01/29/13	22 01/29/14	20 03/18/20	8 01/28	7 01/29	2.0			26.1
AMERADA HESS - TIOGA #3	1997	JAN-MAR	2447	130 01/09/09	121 01/09/08	55 01/09/08	55 01/09/11	28 01/09	12 01/04	3.0			27.1
BEAR PAW - MGP #3	1997	JAN-MAR	1194 ***	14 03/04/10	14 03/04/11	12 03/04/11	9 02/28/17	4 03/04	3 03/17	1.4			15.0
BEULAH	1997	JAN-MAR	2233	25 03/12/05	22 02/10/18	18 01/14/05	17 03/12/05	8 03/12	6 01/03	2.9			55.7
DGC #12	1997	JAN-MAR	2252	89 01/18/17	53 01/31/03	36 01/18/17	30 03/17/11	8 01/18	7 03/29	2.2			24.9
DGC #14	1997	JAN-MAR	2298	99 01/30/17	70 01/30/12	46 01/30/17	44 01/30/14	16 01/30	7 03/02	2.2			28.7
DGC #16	1997	JAN-MAR	2231	140 03/31/10	101 02/02/17	79 02/02/17	72 03/31/11	17 02/02	16 03/31	3.7			70.6
DGC #17	1997	JAN-MAR	2080	55 03/11/16	52 03/11/12	25 01/28/12	24 03/11/18	7 02/27	6 03/17	2.6			52.5
DUNN CENTER	1997	JAN-MAR	2278	58 03/12/02	26 03/12/01	30 03/12/02	18 03/12/17	14 03/12	5 03/17	1.7			22.3
FARGO RESIDENTIAL	1997	JAN-MAR	2214	43 02/09/06	31 02/08/12	24 02/09/08	23 02/11/11	8 02/08	7 01/13	2.6			57.0
HANNOVER	1997	JAN-MAR	2217	41 02/10/15	41 02/10/16	31 02/10/17	28 01/20/23	8 01/28	7 02/10	2.1			32.6
LITTLE KNIFE #5	1997	JAN-MAR	2173	20 03/12/03	16 03/12/12	13 03/12/05	12 03/12/14	7 03/12	5 01/28	1.6			23.7
MANDAN REFINERY - SPM	1997	JAN-MAR	2250	158 01/09/04	153 01/15/19	138 01/09/05	136 01/04/20	104 01/09	59 01/10	10.8		1	60.7
SHARON	1997	JAN-MAR	2259	15 01/13/15	14 01/27/21	11 01/27/23	8 01/05/17	4 01/27	4 02/21	1.6			36.7

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : SULFUR DIOXIDE (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1 - HOUR 1ST MM/DD/HH	1 - HOUR 2ND MM/DD/HH	3 - HOUR 1ST MM/DD/HH	3 - HOUR 2ND MM/DD/HH	24 - HOUR 1ST MM/DD	24 - HOUR 2ND MM/DD	ARITH MEAN	1HR #>273	24HR #>99	% >MDV
TRNP - NU	1997	JAN-MAR	1769	16 01/22/22	16 03/11/13	10 01/22/23	9 01/28/11	4 01/28	4 03/04	1.4			17.4
WHISKEY JOE - SPM	1997	JAN-MAR	2150	18 03/17/13	13 01/15/11	11 03/17/14	8 03/14/20	4 01/28	3 03/27	1.5			23.0

The maximum 1-hour concentration is 158 ppb at MANDAN REFINERY - SPM on 01/09/04
The maximum 3-hour concentration is 138 ppb at MANDAN REFINERY - SPM on 01/09/05
The maximum 24-hour concentration is 104 ppb at MANDAN REFINERY - SPM on 01/09

* The air quality standards are:
  STATE Standards -
  1) 273 ppb maximum 1-hour average concentration.
  2) 99 ppb maximum 24-hour average concentration.
  3) 23 ppb maximum annual arithmetic mean concentration.

  FEDERAL Standards -
  1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
  2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
  3) 30 ppb annual arithmetic mean not to be exceeded in a calendar year.

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	PERIOD	OBS	5-MINUTE MAXIMA 1ST	DATE MM/DD/HH	2ND	DATE MM/DD/HH	3RD	DATE MM/DD/HH	# HOURS >600	% >MDV
MANDAN REFINERY - SPM	1997	JAN-MAR	2218	285	3/19/14	239	1/ 4/20	236	3/ 4/13	0	69.5

The maximum 5-minute concentration is 285 ppb at MANDAN REFINERY - SPM on 3/19/14

* No standard is currently in effect.

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Hydrogen Sulfide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1 - HOUR 1ST MM/DD/HH	1 - HOUR 2ND MM/DD/HH	24 - HOUR 1ST MM/DD	24 - HOUR 2ND MM/DD	3 - MONTH 1ST MM	3 - MONTH 2ND MM	ARITH MEAN	1HR #>200	24HR #>100	% >MDV
AMERADA HESS - TIOGA #2	1997	JAN-MAR	2380	44 02/26/18	44 03/30/02	6 03/30	5 01/07	2 03	1 01	1.6			14.8
BEAR PAW - MGP #4	1997	JAN-MAR	1616 ***	13 01/29/06	12 01/29/07	5 01/29	4 03/12	***	***	1.7			26.2
LITTLE KNIFE #5	1997	JAN-MAR	1971	70 02/08/11	56 01/06/09	10 01/19	8 02/17	3 02	3 03	2.8			46.0
TRNP - NU	1997	JAN-MAR	1761	29 02/18/21	25 02/18/20	4 02/18	3 02/19	1 03	***	1.4			12.9
WHISKEY JOE - SPM	1997	JAN-MAR	2148	247 03/14/22	227 03/29/19	40 02/01	32 03/14	8 01	8 03	8.3	4		43.4

The maximum 1-hour concentration is 247 ppb at WHISKEY JOE - SPM on 03/14/22
the maximum 24-hour concentration is 40 ppb at WHISKEY JOE - SPM on 02/01
The maximum 3-month concentration is 8 ppb at WHISKEY JOE - SPM on 01

* The State air quality standards are:
1) 10 ppm maximum instantaneous (ceiling) concentration not to be exceeded.
2) 200 ppb maximum 1-hour average concentration not to be exceeded more than once per month.
3) 100 ppb maximum 24-hour average concentration not to be exceeded more than once per year.
4) 20 ppb maximum arithmetic mean concentration averaged over three consecutive months.

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ozone (PPB)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1 - HOUR 1ST MM/DD/HH	1 - HOUR 2ND MM/DD/HH	1 - HOUR 3RD MM/DD/HH	8 - HOUR 1ST MM/DD/HH	8 - HOUR 2ND MM/DD/HH	8 - HOUR 3RD MM/DD/HH	1HR #>120	8HR #>80
FARGO RESIDENTIAL	1997	JAN-MAR	2246	68 03/20/14	65 03/20/15	64 03/20/13	58 03/08/19	55 03/08/18	55 03/08/17		
HANNOVER	1997	JAN-MAR	2288	54 03/07/19	54 03/07/20	54 03/06/21	52 03/15/22	50 03/15/21	50 03/15/20		
SHARON	1997	JAN-MAR	2247	68 03/08/18	67 03/08/16	67 03/08/17	65 03/08/21	59 03/08/20	59 03/08/22		

The maximum 1-hour concentration is 68 ppb at FARGO RESIDENTIAL on 03/20/14
The maximum 8-hour concentration is 65 ppb at SHARON on 03/08/21

* The air quality standards for ozone are:
STATE - 120 ppb maximum 1-hour concentration not to be exceeded more than once per year.
FEDERAL - 120 ppb maximum 1-hour concentration with no more than one expected exceedance per year.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1-HOUR 1ST MM/DD/HH	MAXIMA 1-HOUR 2ND MM/DD/HH	ARITH MEAN	% >MDV
BEULAH	1997	JAN-MAR	2248	39 01/02/16	39 03/07/06	4.3	69.3
DGC #12	1997	JAN-MAR	2276	27 01/18/17	25 02/14/05	3.7	92.4
DGC #17	1997	JAN-MAR	2213	78 01/01/06	69 03/02/02	3.0	71.7
FARGO RESIDENTIAL	1997	JAN-MAR	1950	65 03/05/07	64 02/12/08	11.1	83.0
HANNOVER	1997	JAN-MAR	2276	33 01/20/21	27 01/02/21	2.2	50.3
SHARON	1997	JAN-MAR	2233	16 01/14/13	12 01/26/17	1.5	20.4

The maximum 1-hour concentration is 78 ppb at DGC #17 on 01/01/06

* The air quality standards are:
STATE - 53 ppb maximum annual arithmetic mean concentration.

FEDERAL - 53 ppb annual arithmetic mean concentration.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable $PM_{2.5}$ Particulates ($\mu g/m^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	MAX 24-HOUR 1ST MM/DD	MAX 24-HOUR 2ND MM/DD	MAX 24-HOUR 3RD MM/DD	ARITH MEAN	#> 50	AM>20	% >MDV
BEULAH	1997	JAN-MAR	15	3.6	11.0 03/05	10.5 01/04	10.4 03/17	7.2			86.6
BISMARCK RESIDENTIAL	1997	JAN-MAR	15	5.0	13.9 02/09	13.1 03/05	11.0 02/03	8.8			100.0

The maximum 24-hour concentration is 13.9 µg/m3 at BISMARCK RESIDENTIAL on 02/09

* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable PM_{10} Particulates ($\mu g/m^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	MAX 24-HOUR 1ST MM/DD	MAX 24-HOUR 2ND MM/DD	MAX 24-HOUR 3RD MM/DD	ARITH MEAN	#>150	AM>50	% >MDV
BEULAH	1997	JAN-MAR	12	4.0	14.5 03/05	13.1 03/17	12.5 01/04	9.0			100.0
BISMARCK RESIDENTIAL	1997	JAN-MAR	15	5.0	16.9 02/09	16.7 03/05	15.7 03/29	10.0			100.0
DICKINSON RESIDENTIAL	1997	JAN-MAR	12	1.1	8.4 03/17	5.8 03/11	5.6 01/28	3.6			41.6
FARGO RESIDENTIAL	1997	JAN-MAR	15	5.0	21.2 03/05	16.0 02/09	15.0 02/27	10.3			100.0
GRAND FORKS - NORTH	1997	JAN-MAR	13	5.5	33.6 02/03	30.5 03/23	10.2 03/29	11.6			100.0
SHARON	1997	JAN-MAR	15	1.7	16.3 02/09	8.9 03/29	7.5 02/03	6.3			80.0
WILLISTON RESIDENTIAL	1997	JAN-MAR	13	3.4	16.6 02/27	15.9 03/17	13.1 01/04	8.5			76.9

The maximum 24-hour concentration is 33.6 $\mu g/m3$ at GRAND FORKS - NORTH on 02/03

* The STATE and FEDERAL air quality standards are:
1) 150 $\mu g/m3$ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
2) 50 $\mu g/m3$ expected annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable $PM_{2.5}$ Sulfates ($\mu g/m^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	MAX 24-HOUR 1ST MM/DD	MAX 24-HOUR 2ND MM/DD	MAX 24-HOUR 3RD MM/DD	ARITH MEAN	#>15.	AM>5.	% >MDV
BEULAH	1997	JAN-MAR	15	1.3	6.6 01/04	5.0 03/17	4.8 03/05	3.1			100.0
BISMARCK RESIDENTIAL	1997	JAN-MAR	15	1.4	6.0 01/04	5.1 02/09	4.3 01/16	3.2			100.0

The maximum 24-hour concentration is 6.6 $\mu g/m3$ at BEULAH on 01/04

* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable PM_{10} Sulfates ($\mu g/m^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	MAX 24-HOUR 1ST MM/DD	2ND MM/DD	3RD MM/DD	ARITH MEAN	#>15.	AM>5.	% >MDV
BEULAH	1997	JAN-MAR	12	1.2	6.2 01/04	5.1 03/17	4.9 03/05	3.2			100.0
BISMARCK RESIDENTIAL	1997	JAN-MAR	15	1.1	5.6 02/09	4.0 01/04	4.0 02/21	3.0			100.0
DICKINSON RESIDENTIAL	1997	JAN-MAR	12	0.9	3.0 03/17	2.5 02/15	2.3 01/28	1.8			100.0
FARGO RESIDENTIAL	1997	JAN-MAR	15	1.3	6.6 03/05	4.6 02/09	4.3 03/11	3.0			100.0
GRAND FORKS - NORTH	1997	JAN-MAR	13	0.9	6.3 02/03	4.9 03/23	2.4 02/09	2.3			100.0
SHARON	1997	JAN-MAR	15	1.2	5.0 02/09	3.8 02/03	3.1 03/05	2.3			100.0
WILLISTON RESIDENTIAL	1997	JAN-MAR	13	0.9	6.5 01/04	5.0 03/11	4.8 02/27	2.7			100.0

The maximum 24-hour concentration is 6.6 µg/m3 at FARGO RESIDENTIAL on 03/05

* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : $PM_{2.5}$ Sulfate/PM_{25} Total Mass Ratio (Percentage)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	MAX 1ST MM/DD	2ND MM/DD	3RD MM/DD	ARITH MEAN
BEULAH	1997	JAN-MAR	13	29	62.9 01/04	48.1 03/17	43.6 03/05	40.5
BISMARCK RESIDENTIAL	1997	JAN-MAR	15	19	65.2 01/04	61.1 01/10	51.8 01/16	37.3

The maximum 24-hour ratio is 65.2 percent at BISMARCK RESIDENTIAL on 01/04

* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : PM_{10} Sulfate/PM_{10} Total Mass Ratio (Percentage)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	MAX 1ST MM/DD	MAX 2ND MM/DD	MAX 3RD MM/DD	ARITH MEAN
BEULAH	1997	JAN-MAR	12	22	49.6 01/04	45.0 01/16	38.9 03/17	34.4
BISMARCK RESIDENTIAL	1997	JAN-MAR	15	15	47.4 01/16	41.7 01/04	40.0 03/23	30.8
DICKINSON RESIDENTIAL	1997	JAN-MAR	5 ***	21	41.1 01/28	36.2 03/11	35.7 03/17	32.8
FARGO RESIDENTIAL	1997	JAN-MAR	15	15	38.0 01/10	36.4 01/04	36.4 03/17	30.0
GRAND FORKS - NORTH	1997	JAN-MAR	13	12	28.9 02/09	25.7 01/28	25.3 03/05	21.0
SHARON	1997	JAN-MAR	12	14	55.8 03/11	50.7 02/03	43.7 03/05	34.4
WILLISTON RESIDENTIAL	1997	JAN-MAR	10 ***	15	49.6 01/04	39.1 03/11	32.9 03/05	28.8

The maximum 24-hour ratio is 55.8 percent at SHARON on 03/11

* No standard is currently in effect.

*** Less than 80% of the possible samples (data) were collected.

SECTION THREE

EXCEEDANCE LISTINGS

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and $PM_{2.5}$ and PM_{10} ($\mu g/m^3$)

The * Identifies the Exceedances

SITE=MANDAN REFINERY - SPM

DATE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25
January 9, 1997	2300	75	92	104*	140					16.5	313		

SITE=WHISKEY JOE - SPM

DATE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25
February 14, 1997	1800	<MDV				208*				8.2	163		
March 14, 1997	2200	7				247*				2.3	146		
March 29, 1997	1900	2				227*				3.4	20		
March 30, 1997	1900	2				226*				7.9	160		

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and $PM_{2.5}$ and PM_{10} ($\mu g/m^3$)

The * Identifies the Exceedances

DATE=January 9, 1997

SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25
MANDAN REFINERY - SPM	2300	75	92	104*	140					16.5	313		

DATE=February 14, 1997

SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25
WHISKEY JOE - SPM	1800	<MDV				208*				8.2	163		

DATE=March 14, 1997

SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25
WHISKEY JOE - SPM	2200	7				247*				2.3	146		

DATE=March 29, 1997

SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25
WHISKEY JOE - SPM	1900	2				227*				3.4	20		

DATE=March 30, 1997

SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25
WHISKEY JOE - SPM	1900	2				226*				7.9	160		